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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/553,956

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Hideichi Sasaoka

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EXAMINER

KING, JOHN B

ART UNIT

PAPER NUMBER

4148

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DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/553,956	<b>Applicant(s)</b> SASAKA ET AL.	
	<b>Examiner</b> JOHN B. KING	<b>Art Unit</b> 4148	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 October 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>31 July 2006, 19 October 2005</u> .                           | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. The instant application having Application No. 10553956 filed on October 19, 2005 is presented for examination by the examiner.

### ***Oath/Declaration***

2. The applicant's oath/declaration has been reviewed by the examiner and is found to conform to the requirements prescribed in **37 C.F.R. 1.63**.

### ***Priority***

3. As required by **M.P.E.P. 201.14(c)**, acknowledgement is made of applicant's claim for priority based on applications filed on September 4, 2003 (JAPAN 2003-312156).

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Drawings***

4. The applicant's drawings submitted are acceptable for examination purposes.

### ***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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6. **Claims 1, 2, 5, and 10** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. As per **claim 1, 2, and 5**, the term “strength” is too broad and makes the claims indefinite. The term “strength” can be interpreted as any kind of strength. The examiner believes that the applicant used the term “strength” to mean “signal strength.” The term “strength” can be found in claim 1 lines 8 and 13, claim 2 lines 2 and 4, and claim 5 lines 10 and 16.

8. As per **claim 2**, the term “multivalue” on line 4 is unclear and makes the claim indefinite. The term “multivalue” should be defined in the written description.

9. As per **claim 10**, it is unclear as to what the applicant means. It appears that the first radio device is comparing the two keys twice.

### ***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. **Claims 1-10** are rejected under 35 U.S.C. 103(a) as being unpatentable over Takatori et al. (US 2002/0111191 A1) published August 15, 2002, hereinafter referred to

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as Takatori, in view of White et al. (US Patent No. 5513263) published April 30, 1996, hereinafter referred to as White.

As per **claim 1**, Takatori discloses a radio communications system comprising: a first antenna having a directivity electrically switchable; a second antenna; and first and second radio devices [base stations] mutually transmitting and receiving a radio wave through a radio transmission path via said first and second antennas, wherein: said first radio device receives a radio wave or waves from said second radio device while changing a directivity of said first antenna with prescribed patterns to form a plurality of directivities, generates a first receive signal profile [weight vector] indicative of a strength profile of a plurality of radio waves received with the respective ones of the directivities; and said second radio device receives a radio wave or waves from said first radio device while changing a directivity of said first antenna with prescribed patterns to form a plurality of directivities, generates a second receive signal profile indicative of a strength profile of a plurality of radio waves received with the respective ones of the directivities (paragraph 157, Takatori teaches a plurality of base stations where each base station has an antenna that can change the directivity characteristics. Takatori also discloses that the base stations can receive and transmit “radio wave signals” to the other base stations through the many terminal stations (transmission path). Takatori also teaches creating a weight vector based upon the signal strength and interference of the signals and changing the directivities of the antennae based upon the weight vector. Takatori teaches the above function of changing the directivity based upon a

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weight vector for multiple antennae which covers the limitation of a first and second radio device.)

However, Takatori does not teach generating a key based upon the signal profile [weight vectors].

White discloses generating a first key and then generating a second key by using a lookup table where the first and second keys should be the same (Figures 4, 6, 7, and 9, White teaches generating two keys in different ways where the two keys should be the same.)

Takatori and White are analogous art because they are from the same field of endeavor of using encryption to perform secure communications.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the antenna control system as taught by Takatori by adding the key generation and encryption as taught by White because it would allow for more secure communication between the radios (key generation is more secure than storing the keys and randomly choosing one).

As per **claim 2**, Takatori in view of White discloses the radio communications system of claim 1 [See rejection to claim 1 above] , wherein: said first and second receive signal profiles [weight vectors] are each formed of a plurality of strength corresponding to said plurality of directivities (Takatori paragraph 157 discloses generating weight vectors based upon signal strength and adjusts the directivities of the antennae accordingly.); and said first and second radio devices multivalue said plurality of strength to generate said first and second private keys (Takatori (paragraph 157)

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teaches generating a weight vector from the strength of a signal. White (figures 4, 6, 7, and 9) teaches generating two keys in different ways where the two keys that are generated are the same).

As per **claim 3**, Takatori in view of White disclose the radio communications system of claim 1 [See rejection to claim 1 above], wherein said first and second radio devices transmit and receive said plurality of radio waves in a time division duplex system (Takatori, paragraph 157, teaches multiple base stations and terminal stations communicating with each other using the same communication channel, frequency, and timing. This can be considered a Time Division Duplex system).

As per **claim 4**, Takatori in view of White disclose the radio communications system of claim 1 [See rejection to claim 1 above], wherein said first radio device verifies that said first private key generated matches said second private key (White (figures 4, 6, 7, and 9) teaches generating keys (passwords) and verifying that the keys match).

As per **claim 5**, Takatori discloses a radio communications system comprising: a first antenna having a directivity electrically switchable; a second antenna; and first and second radio devices mutually transmitting and receiving a radio wave through a radio transmission path via said first and second antennas wherein: said first radio device receives a radio wave or waves corresponding to a plurality of data transmitted by said second radio device in accordance with a prescribed communications protocol while changing a directivity of said first antenna with prescribed patterns to form a plurality of directivities, generates a first receive signal profile indicative of a strength profile of a

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plurality of radio waves received with the respective ones of the directivities; and said second radio device receives a radio wave or waves corresponding to a plurality of data transmitted by said first radio device in accordance with a prescribed communications protocol while changing a directivity of said first antenna with prescribed patterns to form a plurality of directivities, generates a second receive signal profile indicative of a strength profile of a plurality of radio waves received with the respective ones of the directivities (paragraph 157, Takatori teaches a plurality of base stations where each base station has an antenna that can change the directivity characteristics. Takatori also discloses that the base stations can receive and transmit “radio wave signals” to the other base stations through the many terminal stations (transmission path). Takatori also teaches creating a weight vector based upon the signal strength and interference of the signals and changing the directivities of the antennae based upon the weight vector. Takatori teaches the above function of changing the directivity based upon a weight vector for multiple antennae which covers the limitation of using a first and second radio device. Takatori also discloses a communications protocol. The method of sending data from one radio to another always going through a terminal station can be considered as a communications protocol).

However, Takatori does not teach generating a key based upon the signal profile [weight vectors].

White discloses generating a first key and then generating a second key by using a lookup table where the first and second keys should be the same (Figures 4, 6, 7, and



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9, White teaches generating two keys in different ways where the two keys should be the same).

Takatori in view of White are analogous art because they are from the same field of endeavor of using encryption to perform secure communications.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the antenna control system as taught by Takatori by adding the key generation and encryption as taught by White because it would allow for more secure communication between the radios (key generation is more secure than storing the keys and randomly choosing one).

As per **claim 6**, Takatori in view of White disclose the radio communications system of claim 5 [See rejection to claim 5 above], wherein when said first radio device [base station] has said first antenna controlled to be omnidirectional (Takatori, paragraph 66, discloses that the antennae are omnidirectional), said first radio device establishes said radio transmission path [communication channel] between said first radio device and said second radio device and thereafter said first radio device has said first antenna changing the directivity to form said plurality of directivities, while said first radio device communicates said plurality of data with said second radio device (Takatori, paragraph 157, discloses base stations communicating with each other in order to transmit data. Takatori also discloses changing the directivity of the antennae to achieve a stronger signal).

As per **claim 7**, Takatori in view of White disclose the radio communications system of claim 6 [See rejection to claim 6 above], wherein when said first radio device

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communicates each of said data with said second radio device, said first radio device updates a directivity of said first antenna to receive said data from said second radio device and maintains said updated directivity of said first antenna to transmit said received data to said second radio device (Takatori, paragraph 157, discloses bases stations communicating with each other to transmit data. Takatori also teaches changing the directivity of the antennae to achieve a stronger signal).

As per **claim 8**, Takatori in view of White disclose the radio communications system of claim 6 [See rejection to claim 6 above], wherein: said prescribed communications protocol is formed of a plurality of hierarchical layers; said plurality of data are included in a data format in a hierarchical layer of said plurality of hierarchical layers converting said data to said electrical signal; and said hierarchical layer converting said data to said electrical signal is common to a plurality of communications protocols (White, col. 1 lines 28-48, discloses transferring data using wireless LAN. Wireless LAN uses the TCP/IP protocol which is a communications protocol that uses hierarchical layers to transmit data packets).

As per **claim 9**, Takatori in view of White disclose the radio communications system of claim 5 [See rejection to claim 5 above], wherein said plurality of data are each formed of a section detecting a strength of a radio wave received from said first and second radio devices and a section changing the directivity of said first antenna (Takatori, paragraph 157, discloses generating a weight vector based upon the strength of the signal and transferring that weight vector to the bases stations as a control signal

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(data) so that the base stations can change the directivity of the antenna to achieve a stronger signal).

As per **claim 10**, Takatori in view of White disclose the radio communications system of any of claims 1-9 [See rejections to claims 1-9 above], wherein when said first private key generated does not match said second private key, said first radio device matches said first private key to said second private key (As in claim 4 above, White (figures 4, 6, 7, and 9) teaches generating keys (passwords) and verifying that the keys match. It would be obvious to one of ordinary skill in the art to check again to make sure that the keys match before continuing with the communication with the other antenna).

12. **Claims 11 and 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Takatori et al. (US 2002/0111191 A1) published August 15, 2002, hereinafter referred to as Takatori, in view of White et al. (US Patent No. 5513263) published April 30, 1996, hereinafter referred to as White, and further in view of Barrett et al (US Patent No. 5222137) published June 22, 1993, hereinafter referred to as Barrett.

As per **claim 11**, Takatori in view of White disclose the radio communications system of any of claims 1-9 [See rejections to claims 1-9 above].

However, Takatori in view of White does not teach having a first antenna provided for said first radio device arranged adjacent to a terminal of an eavesdropper.

Barrett, col. 1 lines 11-30, discloses that one reason for securing data communications is because of eavesdroppers.

Takatori in view of White and Barrett are analogous art because they are from the same field of endeavor of using encryption to secure data communications.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the antenna control system with encryption as taught by Takatori in view of White by adding the secure data communications as taught by Barrett in order to reduce the risk of theft of data by eavesdroppers.

As per **claim 12**, Takatori in view of White and further in view of Barrett disclose the radio communications system of any of claims 1-9 [See rejections to claims 1-9 above], wherein said first and second radio devices employ said first and second private keys to encrypt and decrypt data, and communicate said data (Barrett, col. 1 lines 58-68 and col. 2 lines 1-16, discloses encrypting data using a key and also transmitting that data which can later be decrypted by another user).

### ***Conclusion***

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN B. KING whose telephone number is (571)270-7310. The examiner can normally be reached on Mon. - Thur. 7:30 AM - 5:00 PM est..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Pham can be reached on (571)272-3689. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/THOMAS K PHAM/  
Supervisory Patent Examiner, Art Unit 4148

JBK